

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

1922.

- June 1 Entries close for Schneider Cup Race
- June 3 R.Ae.C. Whitsun Race Meeting, at Waddon
- June 19 Independent Air Force, R.A.F., Dinner, Hotel Cecil
- June 23-25 International Competition for Touring Aeroplanes, Brussels
- June 27 Royal Aero Club 21st Anniversary Banquet
- July 29 Aerial Derby, starting at Waddon
- Aug. 6-20 French Gliding Competition
- Aug. 6 Gordon-Bennett Balloon Race, Geneva
- Aug. 7 R.Ae.C. Race Meeting, at Waddon
- Aug. (last fortnight) Schneider Cup Seaplane Race, at Naples
- Sept. Tyrrhenian Cup, Italy
- Sept. Italian Grand Prix
- Sept. or Oct. R.Ae.C. Race Meeting, at Waddon
- Sept. 22 Coupe Deutsche (300 kil.)

1923.

- Dec. 1 Entries Close for French Aero Engine Competition

1924.

- Mar. 1 French Aero Engine Competition.

INDEX FOR VOL. XIII.

The Index for Vol. XIII of FLIGHT (January to December, 1921) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 1s. per copy. (1s. 1d. post free).

EDITORIAL COMMENT.



The Ministry of Defence Creation Bill

It is now some time since the formation of a Ministry of Defence, for the more efficient development and co-ordination of the three fighting services, was first suggested. It will be remembered that the subject was brought up during the discussion of the Estimates, but that it was intimated that this step, although receiving consideration, was too important, and involved too many changes, to make it possible to establish such a Ministry during the present financial year. Possibly, this position still obtains, but a step in the right direction has been taken in the introduction of a Bill (Bill 106), to be cited as the Ministry of Defence Creation Act, 1922, to establish a Ministry of Defence consisting of a Principal Secretary of State, who shall be President of the Ministry of Defence, and an Under-Secretary of State for each of the three departments, Admiralty, War Office and Air Ministry respectively. The Bill, which has been brought in by Rear-Admiral Sueter, Sir Cecil Beck, Colonel Claude Lowther, Colonel Sir Thomas Polson, Major Christopher Lowther, Colonel J. Wedgwood, Mr. L'Estrange Malone, Lieut.-Comdr. Kenworthy, Brig.-Gen. G. Cockerill and Major-Gen. Sir John Davidson, proposes to empower the Government to appoint such service and civil members as may be necessary to form, under the Presidency of the Minister of Defence, the Defence Council, and to empower His Majesty, by Order in Council, to appoint such representatives of the Dominions as the Prime Ministers of the Dominions may select, to sit on the Council of Defence.

The Minister of Defence is to be, it is proposed, responsible to the Government for the proper consideration of all strategical and tactical questions bearing upon the defence of the realm, *i.e.*, on the surface of the water, under the water, on land, and

in the air, and for the proper equipment and maintenance of all arms of the three fighting services in a state of readiness and efficiency. He is to arrange for the provision and regulation of an adequate supply of personnel to all three fighting services with a view to co-ordination, and to reduction of unnecessary services, and to maintain a balance as between one service and another in the expenditure required to carry out the general scheme of defence. He will be responsible to His Majesty's Government that the actual expenditure is the minimum that can attain its object.

The Bill is arranged in eleven clauses, to some of which we may now refer in detail. Clause 1, para. (6) provides that the Defence Council shall form the nucleus for an Imperial General Staff; it shall absorb the duties now performed by the Committee of Imperial Defence, and shall have power to co-opt representatives from other Government Departments. Para. (8) of Clause 1 provides that, in order to place the members who serve at the Admiralty, War Office and Air Ministry on a footing of equality, the members of the various boards are to be generally known as First Member of Naval Board, First Member of Army Board, First Member of Air Board, Second Member of Naval Board, etc.

According to Clause 2 the Minister shall, it is suggested, make such provisions as may be necessary to constitute a department to consider and co-ordinate the planning of future operations of all three fighting services, but after operational programmes have been approved by the Defence Council, they are to be carried out by the Admiralty, War Office and Air Ministry themselves, and, except in special circumstances, the Minister shall only issue executive orders to active units and commanders-in-chief through the operations departments of the three services.

Clause 3 provides that the construction, inspection and testing of new material shall be carried out by a department of the Ministry of Defence, so as to provide a nucleus capable of expansion in time of war into a Ministry of Munitions. Advisory bodies for research, scientific work, examination of inventions, etc., shall be formed under the Defence Council, and the Minister shall be responsible that each of the fighting services is equipped with the most up-to-date weapons that modern science dictates.

Of particular general interest is, naturally, Clause 6, which deals with Civil Aviation. This Clause reads:—

"The Minister of Defence shall be responsible that civil aviation is developed and maintained, having due regard to the defensive requirements within the Empire, comparable with the development and maintenance of civil aviation by other leading powers and that subsidies as necessary are provided similar to those arrangements that have previously existed with armament firms, mercantile marine and cable companies. Air enterprise within the Empire shall be encouraged to allow a nucleus being ready for immediate expansion should the necessity of doing so arise."

If the Bill becomes law, the Act is to come into operation on October 1, 1922.

We have already, many months ago, expressed the view that, if the right man can be found for the post of Minister of Defence, the creation of such a centralised control of the three fighting services should result in co-ordinated action of the Nation's resources in all events, to the great gain of the Empire's defensive and offensive barriers. Moreover, and

also highly important, considerable economies should be effected.

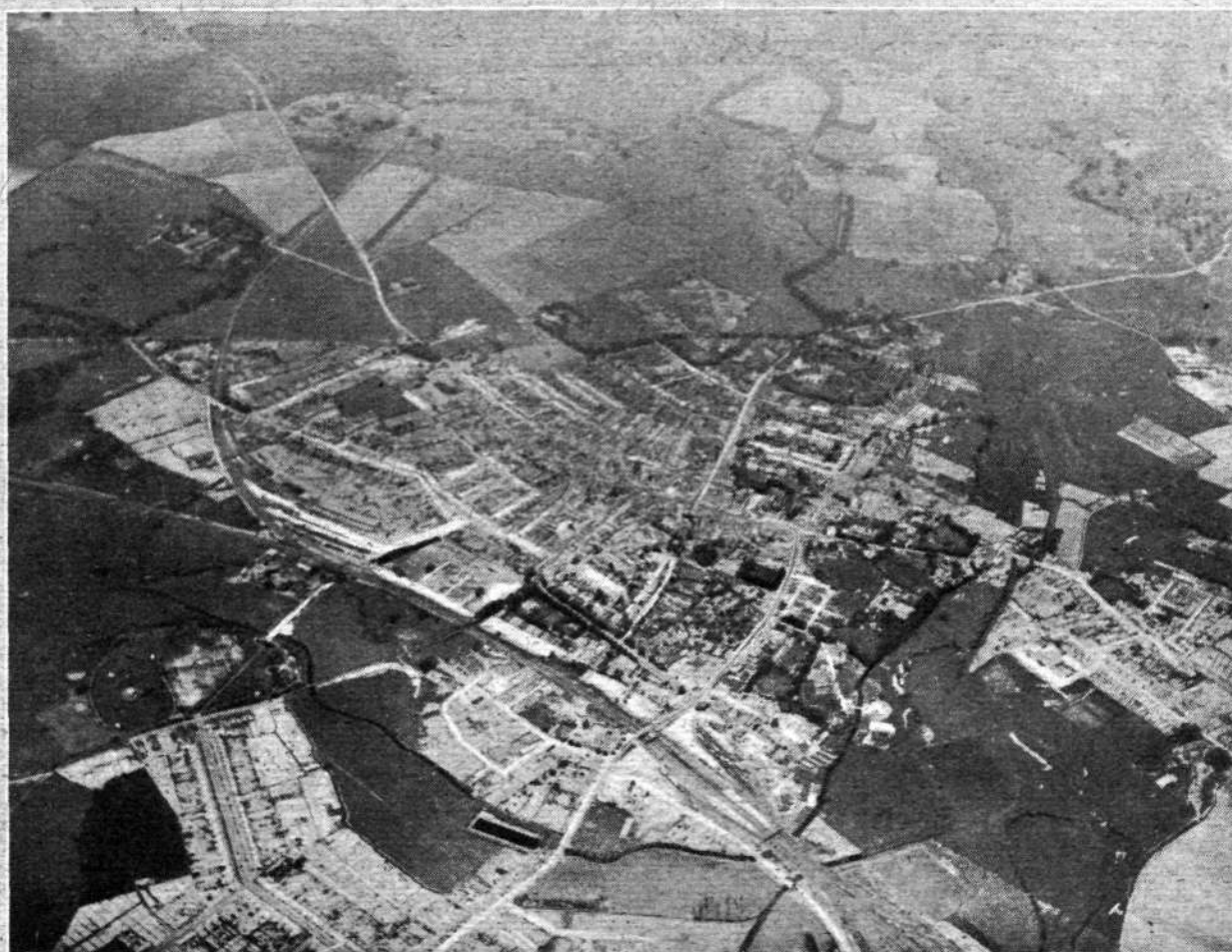
With three separate services working independently it is inevitable that there should be waste and overlapping, and a Minister of Defence would have to see to it that the claims of each service were carefully examined, and that no grant was made for any particular purpose unless the particular service could convince the Defence Council that it could fulfil that purpose more efficiently and economically than any of the other two services. Properly handled, the task of the Minister should not be outside practical politics, but the man chosen must be a strong man, a man of wide vision, a man who is able to sift and weigh evidence, and finally he must not be a man drawn from any of the fighting services, unless one can be found who has had deep experience of all three, otherwise there is the danger that he will not be impartial.

As regards the Clause dealing with Civil Aviation, we are glad to see such emphasis being given to the closest co-operation between Civil Aviation and the defence of the realm. Making the Minister of Defence responsible for giving Civil Aviation its proper support, in proportion to its value to the defences of the country, is a safeguard against turning Civil Aviation over to the Board of Trade, as was feared at one time. What chance the Bill has of going through need not, for the moment, be discussed. That it is sound upon general principles appears to us to be undoubted. In any case, the mere drawing up and presentation of the Bill should help to clear the decks for future official action.

The Royal Air Force Pageant

It is announced that, as in previous years, the R.A.F. Pageant will be held at Hendon, on June 24. Readers of FLIGHT will not need to be reminded that the Pageant is an integral and important part of the training of the Air Force, and fulfils the same function as does the Royal Tournament in the case of the Army and Navy. The experience of the two Pageants already held at Hendon has proved that the general public takes a great interest in service aviation, and for this year we understand that a programme has been arranged which will enable the public to appreciate even to a greater degree than last year the developments that are constantly taking place. Full details of the programme are not yet available, but it is understood that one of the more spectacular items is to be the destruction of a "desert stronghold" by bombing aircraft. In addition to this "star turn" there will no doubt, as in previous years, be plenty of events to keep visitors interested throughout the day, and nobody need fear having a dull time at Hendon on June 24. Stunting will be in evidence and formation flights of various sorts.

It is not too much to say that never, at any time in any country, has an aviation meeting been so well organised, the items run off so well to time, and the interest so well sustained throughout the day, as at the two previous Pageants. We, therefore, confidently predict that, large as were the crowds in previous years, they will be even larger this year. Full particulars of the Pageant and directions for getting to and from Hendon will be published in due course. And, by way of a last point, the whole profits go to the R.A.F. Memorial Fund.



En Route TO LE BOURGET MEETING : In upper picture Maidstone is seen from a height of about 6,000 ft., and the lower photograph, taken from a similar height, gives an excellent idea of the situation of Folkestone. Both photographs were taken from a D.H. 4A belonging to Handley Page Transport, Ltd.



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LE BOURGET : General view of machines, buildings, etc.

COMPARED with our own Aerial Pageant, the meeting at le Bourget was somewhat tame, but, in view of the fact that the meeting was an affair lasting four days, and was got up by the "Vieilles Tiges" to raise funds for their Society (consisting of pilots who obtained their "ticket" before the War), the competitions and exhibitions were quite creditable, and the attendance was fair, especially on the last day, Sunday, May 28, when large crowds visited le Bourget, not only from Paris but from other districts as well. To sustain the interest for four whole days was not, obviously, an easy undertaking, and one can therefore easily forgive certain shortcomings in the organisation. On the whole, however, the meeting must probably be classed as a success, and one hopes that the funds of the "Old Stalks" have received a very substantial and welcome addition.

The Daily Events

The programme which had been arranged included certain daily events run off in series, and a number of competitions for special prizes and cups. In case of any gaps between events it had been arranged that pilots should ascend and give exhibitions of stunt flying, while parachute descents were also to be the order of the day. Dealing with the daily and recurring events in the order in which they were described in the official rules of the meeting, the first was formation flying by "Old Stalks." For this machines were to be started in batches of five in a line, the next five to be started 30 seconds later, and so on. The duration of each flight was to be about 15 minutes, and landings were to be made individually. So far as we were able to ascertain this event did not materialise, but the manner of indicating the start of any event was so vague that we admit we may have missed it. Machines were constantly starting off or coming in, but as to the nature of the particular "concours" in which they were engaged, this was mainly a matter for conjecture. Scoring boards there were none, although megaphone men did certainly shout something unintelligible at the spectators.

The next civilian event was for quick get-away. The machines were lined up 250 metres behind the starting line, and at the drop of a flag they were to get away, and, crossing the starting line in flight, the winner was to be the pilot who first crossed the starting line and completed a circuit of the aerodrome. Number three on the programme was a get-off competition, in which the machines were placed at any desired distance behind a line marked by two posts with a rope secured at three metres above the ground. This line had to be cleared, and the winner was to be the pilot who managed to clear the line after the shortest run.

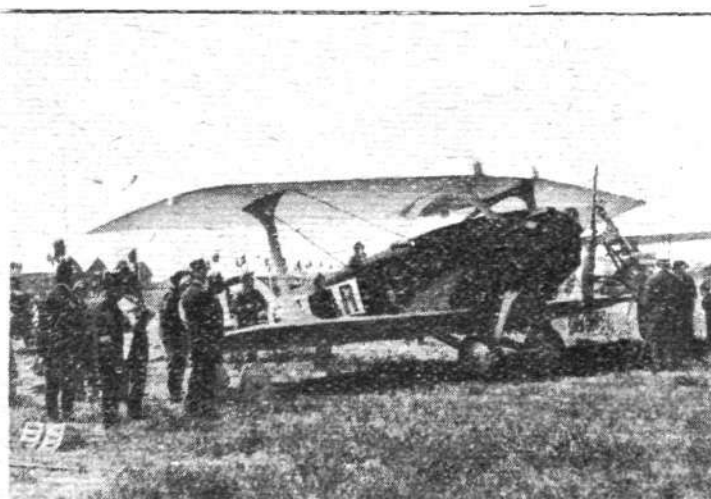
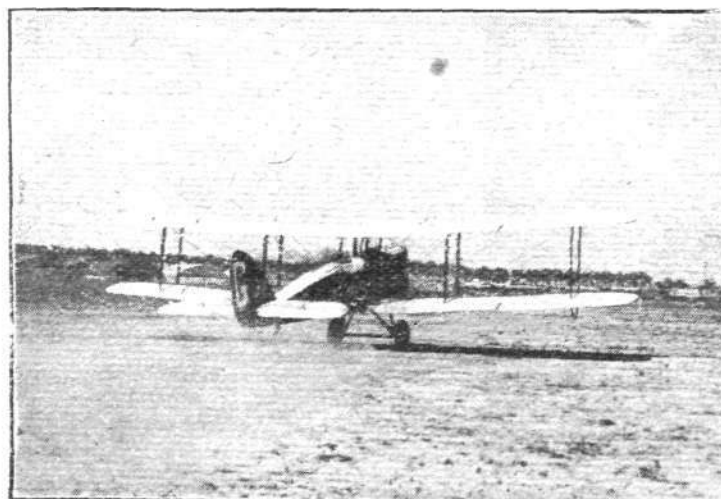
A daily event which certainly might be of practical value was one representing a forced landing in a clearing in a forest. The "forest" was represented by a square of 100 metres side, marked by four posts, joined by a rope secured at a height of four metres. Competitors had to clear the rope and alight inside the square without damaging their machines. The winner to be the pilot who "planted" his machine nearest to the point of intersection of the diagonals of the square.

The rules for the figure-of-eight test required pilots to do this figure in the shortest possible time, two posts marking the space over which the tests were to be made.

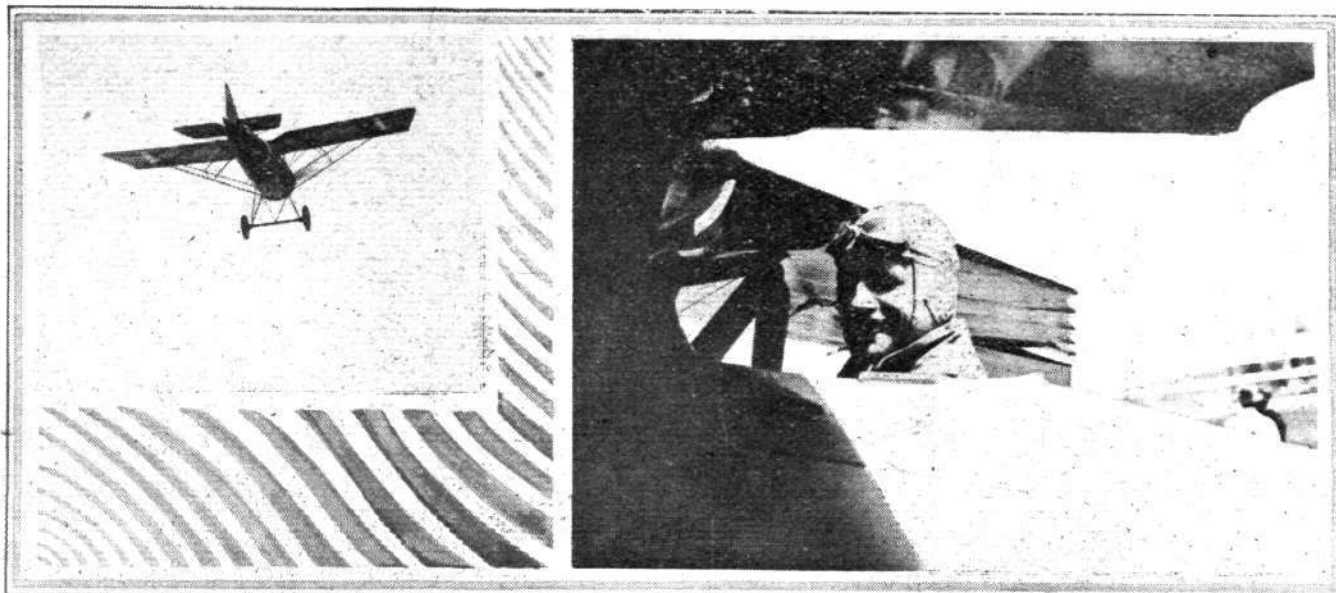
All the foregoing competitions were for civilian aviators. A series of competitions were also arranged for military machines. These included altitude, or rather climbing, competitions, single-seaters having to reach 5,000 metres and two-seaters 4,000 metres in the shortest time, carrying specified loads. In landing competitions the machines had to be landed inside a square of 100 metres side, carrying the same loads as in the climbing tests.

The Coupe Bathiat

M. Léon Bathiat, President of the "Vieilles Tiges" Association, has presented a challenge cup, competition for which is confined to French military aviators. This year's contest was over the route Paris, Angers, Paris, and competitors had to land at Angers, and have their log book



The race for the Coupe Lamblin was over the circuit Paris, Brussels, London, Paris. Our photographs show : On the left, Rex Stocken starting on the D.H. 4 C of the Aircraft Disposal Company, and, on the right, Jean Casale on a Spad-Herbemont. Note his engine being started by the aid of the Odier starter.



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STUNT FLYING AT LE BOURGET : Most of the work of entertaining the spectators between events fell to Fronval, who handled his Morane Parasol with great skill. The machine, seen in the inset, was of the type having strut bracing below the wings.

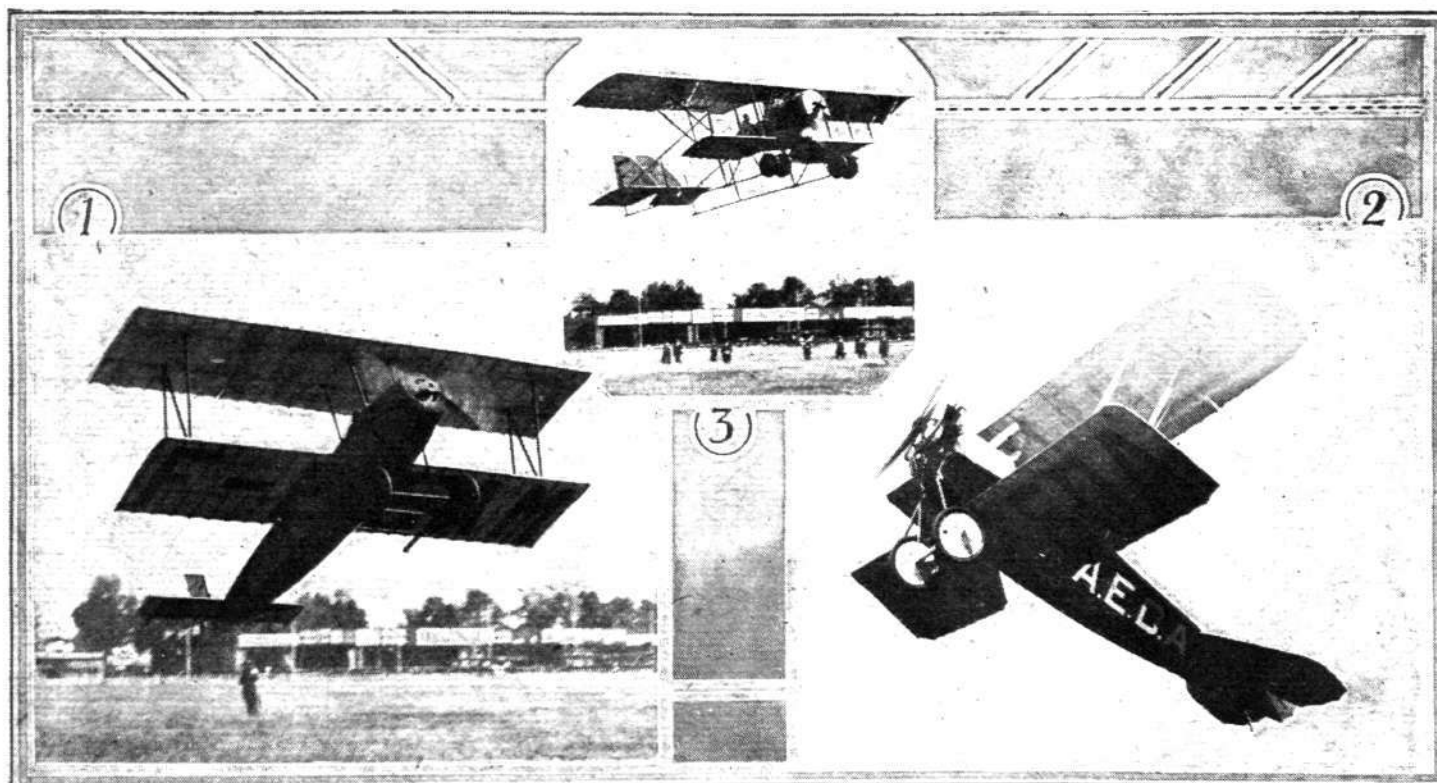
signed by the representative of the "Vieilles Tiges." The exact route to be followed was not indicated to the competitors until just before the start for Angers, and for the return journey the route was again indicated immediately before the machines left. The squadron to which belongs the officer winning the cup retains it for one year, and the cup becomes the property of the squadron which has won it twice in succession.

The Coupe Lamblin

This cup has been presented by the designer and constructor of the famous Lamblin radiator, and is to be competed for during the next three years. For 1922 the course was over the route Paris-Brussels, Brussels-London and London-Paris. The cup is valued at 5,000 francs, and this year the prizes amount to 20,000 francs. The competition is international, and the entrance fee 1,000 francs per machine. Notice must be given four clear days before any intended attempt, and competitors may make their attempt any time (except Saturdays and Sundays) between May 25

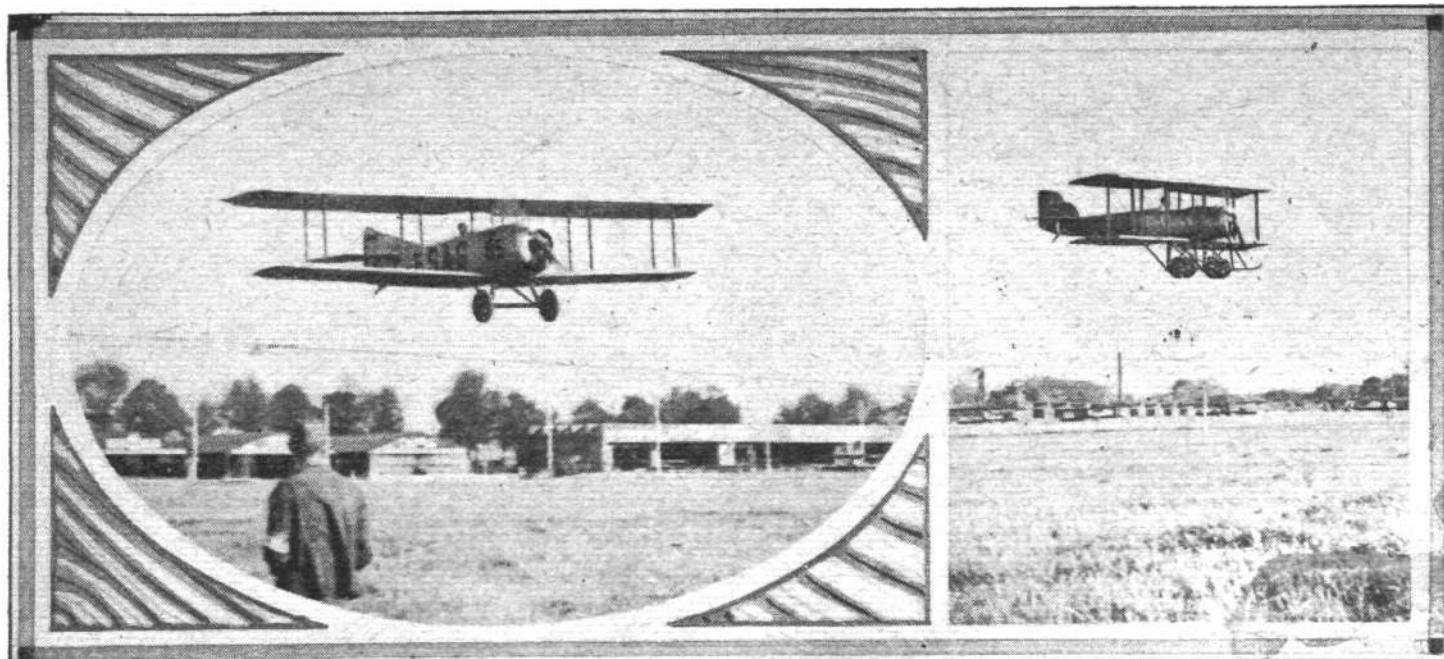
and October 31. The following rules have been drawn up for this year's competition. The race is a handicap one over, as already mentioned, the Paris-Brussels-London-Paris route. The scratch man is started off at 10 a.m. It appears that single-seater machines with engines of 400 h.p. or more will be classed as scratch. The other machines will be started as follows, according to handicap: Single-engined machines with engines of 200 h.p. to 400 h.p. will receive 15 minutes' start. Single-engined machines with engines of less than 200 h.p. will receive 30 minutes' start. Twin-engined machines will receive 45 minutes' start, and multi-engined machines one hour's start.

As the competition is expected to attract a number of commercial machines, provision has been made in the regulations for making allowance for the carrying of passengers. According to the number of passengers carried (75 kilogrammes weight, or the equivalent in ballast), the time of starting will be put forward a number of minutes equal to the square of the number of passengers. Thus, if a single-engined machine of 300 h.p. carries five passengers, his time



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THREE MACHINES IN THE GET-OFF COMPETITION : On the left Bossoutrot on the Farman Sport does a "zoom." On the right Douchy "lifts" his Henry Potez into the air, and, inset, Goron pulls up his antiquated Caudron.



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IMITATING FORCED LANDINGS : Peullot, on the left, just clears the line on his Caudron. On the right Chevilliard floats in on the Farman.

of starting (the scratch man starting at 10 a.m.) will be 9.30 (*i.e.*, 9.45-5²). This rule, of course, puts a premium on the number of passengers carried, and should help to encourage the entry of large passenger machines. To take an example, if a twin-engined machine carries 20 passengers, it will be given 7 hours 25 minutes' start (*i.e.*, 45 minutes as a twin-engined machine and 400 minutes for the 20 passengers). It would, therefore, take a very fast single-seater machine to catch up with such a machine from scratch.

As regards the distribution of the 20,000 francs prizes for this year's competition, 3,500 were awarded for the race held during the le Bourget meeting, first prize being 2,000 francs, second 1,000 francs and third 500 francs. The balance of 16,500 francs will be awarded on November 1, 1922, to the three pilots having made the best times over the course, as follows: First, 10,000 francs, second 4,000 francs, and third 2,500 francs.

Other Competitions at le Bourget Meeting

In addition to the Coupe Bathiat already referred to, and the daily events indicated in the first part of these notes, a competition for touring machines had been arranged for Friday, May 26. This was confined to machines with engines of 60 h.p. or less. The contest included get-off, landing, climb to 1,000 metres, speed test over measured



The Coupe Bathiat was reserved for military pilots, and was over the course Paris, Angers, Paris: Our photograph shows Adjutant Joseph landing on his Breguet at le Bourget.



The Pierre Levasseur at le Bourget: This machine was exhibited at the last Paris Aero Show, and is remarkable for its unorthodox construction. It flies very well and sells at a very low price.



Mr. Rex Stocken, the only British representative at the le Bourget Meeting, wearing his usual happy smile.

course of 10 km., speed range, dismantling and erecting, followed by flight, and small space for garaging. Points were given for the various features. The prizes for this competition were: First, 1,500 francs, second 1,000 francs, third 500 francs.

For Saturday, May 27, the Coupe Dubonnet had been placed on the programme. This competition was a "Prix de l'Estafette," and was open to both military and civilian pilots. It consisted in six circuits of the course le Bourget, Chateau de la Queue, Tremblay-les-Gonnesse, le Bourget. After returning to le Bourget the machines had to land and the pilot or his passenger obtain from the *Tribune d'honneur* a postal packet indicating his route on the next lap. This had to be done on each circuit, and the winner was to be the pilot, having covered the six circuits in the shortest time.

A Brief Visit to le Bourget

Having outlined above the main events which had been planned for the meeting at le Bourget from May 25 to May 28, we may proceed to a brief account of a short visit which we paid to the scene of the meeting. As a certain waste of time had been allowed for in connection with obtaining Press passes, etc., which are usually a source of considerable difficulty to a British Press representative in France, we wended our way to Croydon on the day before the opening of the meeting. A brief consultation with Mr. Cogni, of Handley Page Transport, soon resulted in our being seated under the "conservatory" roof of a D.H. 4A, carrying, besides ourselves, a lady passenger, and piloted by Major Foot. On getting away from Croydon, it was soon found that, even rushing along at high speed, the heat was uncomfortable, and so Foot pushed up to about 6,000 ft., where the air was less oppressive, and from which altitude we obtained a splendid view of the country below. Maidenstone was passed at a height of about 6,000 ft., and before long the coast hove in sight and disappeared

under us as we crossed the coastline just west of Folkestone. The flight across the Channel was soon accomplished, and we were impressed by the comparative absence of shipping in that busy thoroughfare. Coming into France near Boulogne, we sighted in turn Berck, Abbeville, Beauvais and le Bourget. We do not know whether it was out of consideration for the lady passenger, but Major Foot's descent was so gentle that it was quite imperceptible, and we touched without a jar.

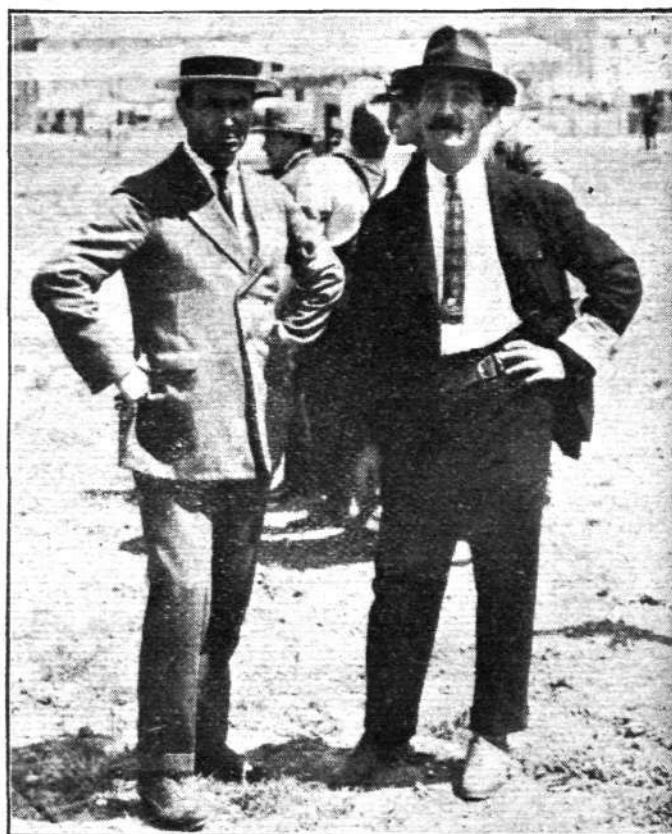
The afternoon was spent in hunting up the address of the "Old Stalks," there to obtain the necessary armlet which should establish us as persons fit to go on the grass of le Bourget. The armlet was duly obtained, and how the rest of that day was spent does not concern this story.

May 25 was the opening day of the meeting, and the two big events were the Coupe Bathiat for military aviators, and the Coupe Lamblin for civilians. No less than 14 military pilots started for the former, which was over the course le Bourget, Angers, le Bourget, with compulsory landing at Angers. This race was won by Lieutenant Batelier, whose time was 3 h. 25 mins. 39 $\frac{3}{4}$ secs. For the Coupe Lamblin only three machines started. These were piloted by Bajac, Casale and R. Stocken, the A.D.C. pilot, who was the only British representative at the meeting. As indicated above, the Coupe Lamblin is a handicap race, and the best time was made on May 25 by Stocken on the D.H. 4C, with 400 h.p. Liberty engine, who started scratch. On handicap, however, the race went to Bajac, whose handicap time was 6 h. 18 mins. 15 secs. Stocken's handicap time was 6 h. 28 mins. 41 secs. Casale was forced to land at Esquennoy owing to fog, and was thus considerably delayed. His handicap time was 6 h. 42 mins. 14 secs.

Apart from these more important races, the first day of the meeting saw several of the minor events run off. As already indicated, it was a matter of some difficulty to follow the events, owing to the somewhat happy-go-lucky nature of the organisation. It appeared, however, that an attempt was to be made at doing the quick get-off, the fast get-away, and other events, and after waiting about for a considerable time these actually took place. The number of entrants was not great, but some of the get-offs were quite remarkable. We succeeded in obtaining several photographs which indicate the manner in which low-powered machines, if lightly loaded, can be "hoiked" off. Bossoutrot's "zooming" on the Farman Sport with 60 le Rhone was particularly impressive, as one of the accompanying photographs will show. The ingenious manner employed for ascertaining whether or not a machine had "cleared" the rope was rather



Mlle. Graby, who made a number of parachute jumps from Fronval's machine.



Two "Old-Timers" at le Bourget: On the left M. Gaubert, and, on the right, M. Louis Paulhan of London-Manchester fame.

amusing. Two poles were placed some distance apart, and on each, at the specified height, was a mark. An observer mounted one of the poles, holding his eye in line with the two marks. By sighting along these he decided whether or not any machine cleared the required altitude, the machines not actually flying over the "rope." This event was won by Douchy, who cleared a height of 7 metres in a distance of 60 metres. Poiree took 63 metres, and Chevilliard 65 metres. The "forced landing" in a small field caused several competitors to come to grief, in stalling their machines too violently into the 100 metres square after clearing the line. This event was also won by Douchy, who came to rest 10 m. 35 from the centre of the square. Goron on the Caudron was 38 m. 80 from the centre, and Fronval on the Morane Parasol 42 m. 60 from the centre. We heartily wished some of the pilots from last year's Pageant could have been present to demonstrate side-slip landings.

In the competition for quick get-away, including a circuit of the aerodrome, Bossoutrot on the Farman Sport was first in the first series, Canivet in the second, and Fronval in the third. In the aggregate, however, the placing was as follows: 1, Fronval; 2, Bossoutrot; 3, Canivet. In the figure-of-eight tests, which, according to the rules should be flown at a height of not more than 100 metres, but which was flown much higher by the majority of competitors, Douchy was first in 24½ secs. In between events there were exhibitions of stunt flying by several pilots, notably Fronval on the Morane Parasol.

Friday morning, for some reason, did not show the same activity, and several of the numbers down on the programme were conspicuous by their absence. It appeared that several events were hours late in starting, and as we had to be back in London by Saturday morning we decided not to sacrifice the pleasure of flying back to a longer stay at le Bourget and a return journey by train and boat. Consequently, by somewhere about 2 p.m. we were seated in a D.H. 34 belonging to the Instone Air Line, and, piloted by Mr. Sheppard, were soon on our way. At Abbeville we ran into

fog, and from there until we emerged into comparatively clear air at Croydon we saw but little of the ground.

To return to the events at le Bourget, these must, as regards the rest of the meeting, be summarised from other than personal observations. It appears that on the Friday afternoon the French President, accompanied by M. Laurent Eynac, visited the aerodrome, where he witnessed a number of flights by practically all the pilots present. Of the events of the day, the Coupe Bathiat race was won by Lieut. Rabattel in 2 h. 47 mins. 26½ secs. The climb to 4,000 metres by Adjutant Cas in 12 mins. 19 secs. The get-away by Fronval in 250 metres in 13½ secs. The landing test for touring machines by Rapini in 47 metres 70, and the get-off and speed over 10 km. in the touring machine competition by Douchy. Poiree, in the same contest, dismantled his machine in 4 mins. 30½ secs, and re-erected it again in 4 mins. 33½ secs. He afterwards flew it over the 10 km., taking 13 mins 10 secs. for the distance. Lecointe flew his Gordon-Bennett Nieuport over a kilometre course at a speed of 300 km. per hour.

The chief event, as regards public interest, of Saturday, May 27, was the Coupe Dubonnet, in which 24 machines took part, being started off 12 at a time, but at present the results have not been made known. The figure-of-eight was won by Poiree, the quick get-away by Haeglen, the speed range in touring machine event by Douchy, and the quick get-off by Bossoutrot. In the evening there was night flying.

Sunday, May 28, was largely a repetition of the previous days as regards programme, but the meeting on that day was attended by large crowds from Paris. There is little need to go into details, excepting to state that the Bathiat Cup was awarded for this year to Lieut. Rabattel.

Taking it all around, the Bourget meeting was fairly successful compared with other recent meetings in France, and the "gate" was reasonably good. On the Sunday the attendance was, of course, the largest of all, and it is to be hoped that the "Vieilles Tigres" will, after deducting expenses, have a substantial surplus left with which to do the good work for which the meeting was arranged.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

WHITSUNTIDE AIR RACES

Waddon Aerodrome, Croydon

(Saturday, 3rd June, 1922.)

PROGRAMME

Third Club Handicap (16 miles). Prize £20. For machines with a speed not exceeding 120 miles per hour.

Entrant, Machine, Engine and Pilot:—

Lieut.-Col. Spenser Grey; Avro 504 k; 110 h.p. Le Rhone; Spenser Grey.

Major H. Petre; Avro 504 k; 110 h.p. Le Rhone; Petre. De Havilland Aircraft Co., Ltd.; D.H. 9 b; 230 h.p. Siddeley Puma; Cobham.

Lieut.-Col. F. K. McClean; Avro Viper; 180 h.p. Wolseley; Hinkler.

Bristol Aeroplane Co., Ltd.; Bristol Monoplane; 100 h.p. Bristol Lucifer; Uwins.

F. P. Raynham; Sopwith Antelope; 180 h.p. Wolseley Viper; Raynham.

Exhibition Flying by J. H. James on the Gloucestershire "Bamel," the holder of the British Speed Record.

First Sprint Handicap (8 miles). Prize £20. For machines with a speed of not less than 110 miles per hour.

Entrant, Machine, Engine and Pilot:—

De Havilland Aircraft Co., Ltd.; D.H. 9 b; 230 h.p. Siddeley Puma; Cobham.

Major Grant (Aircraft Disposal Depot); D.H. 9 a; 350 h.p. Rolls-Royce; Stocken.

Major Grant (Aircraft Disposal Depot); Martinsyde F4; 300 h.p. Hispano-Suiza; Foot.

Major Grant (Aircraft Disposal Depot); S.E. 5 a; 200 h.p. Wolseley Viper; Hayns.

Balloon Sniping Competition.

First Whitsuntide Handicap (24 miles). Prizes £70. For machines with a speed of not less than 100 miles per hour.

Entrant, Machine, Engine and Pilot:—

De Havilland Aircraft Co., Ltd.; D.H. 9 b; 230 h.p. Siddeley Puma; Cobham.

Lieut.-Col. F. K. McClean; Avro Viper; 180 h.p. Wolseley Viper; Hinkler.

Bristol Aeroplane Co., Ltd.; Bristol Monoplane; 100 h.p.

"Bristol" Lucifer; Uwins.

Major Grant (Aircraft Disposal Depot); D.H. 9 a; 350 h.p. Rolls-Royce; Stocken.

Major Grant (Aircraft Disposal Depot); Martinsyde F4; 300 h.p. Hispano-Suiza; Foot.

Major Grant (Aircraft Disposal Depot); S.E. 5 a; 200 h.p. Wolseley Viper; Hayns.

F. P. Raynham; Sopwith Antelope; 180 h.p. Wolseley Viper; Raynham.

Parachute Demonstrations by W. Newell.

Exhibition Flights.

Surrey Open Handicap (16 miles). Prizes £40.

Entrant, Machine, Engine and Pilot:—

Lieut.-Col. Spenser Grey; Avro 504 k; 110 h.p. Le Rhone; Spenser Grey.

Flying Officer Alliott; Avro 504 k; 110 h.p. Le Rhone; Alliott.

De Havilland Aircraft Co., Ltd.; D.H. 9 b; 230 h.p. Siddeley Puma; Cobham.

Lieut.-Col. F. K. McClean; Avro Viper; 180 h.p. Wolseley Viper; Hinkler.

Bristol Aeroplane Co., Ltd.; Bristol Monoplane; 100 h.p.

"Bristol" Lucifer; Uwins.

Major Grant (Aircraft Disposal Depot); D.H. 9 a; 350 h.p. Rolls-Royce; Stocken.

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F. P. Raynham; Sopwith Antelope; 180 h.p. Wolseley Viper; Raynham.

Offices: THE ROYAL AERO CLUB,

3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

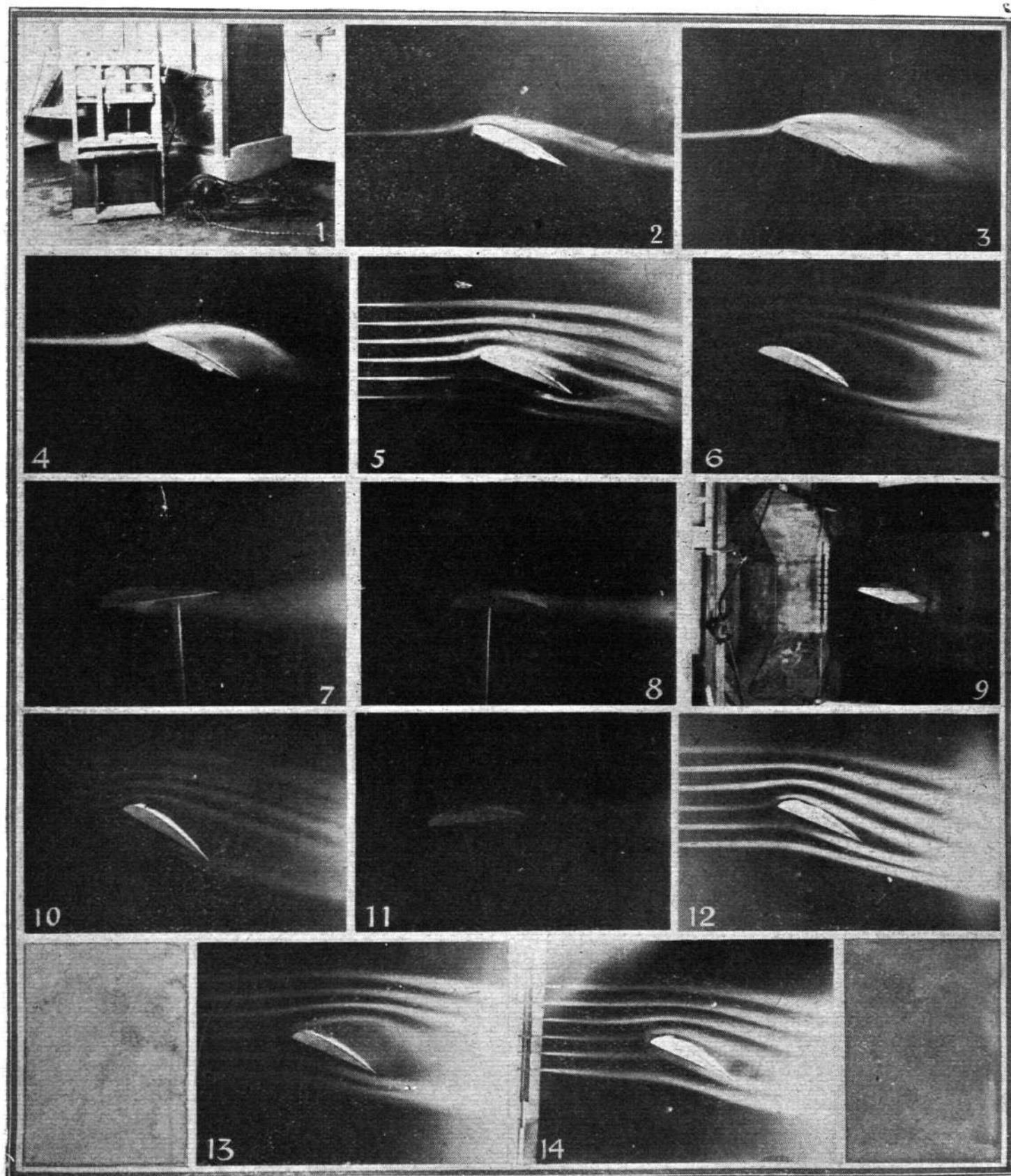
FLOW TESTS ON SLOTTED AEROFOILS

Some Experiments Carried Out by Herr Lachmann at Göttingen

ALTHOUGH the action of the air over a slotted plane is understood in a general way, the theory of this type of aerofoil is not as yet susceptible of complete mathematical treatment, and a good deal of further research is required before we can claim thoroughly to understand what really takes place. In order to discover more about the nature of the flow, Herr Lachmann, who, it will be remembered, invented the slotted aerofoil in Germany at the same time as did Mr. Handley Page in this country, has carried out some tests at the Göttingen Laboratory on a slotted aerofoil. The tests were arranged to show, by means of sal-ammoniac smoke blown

across the aerofoil, the behaviour of the eddies at various points and at various angles and velocities, and some very interesting results were obtained.

In Fig. 1 of the accompanying photographs may be seen the apparatus used for producing the smoke. The flask on the right-hand side contains hydrochloric acid, while the flask in the middle holds a quantity of ammonia. These two flasks stand in a bed of water warmed by a Bunsen burner to assist vaporisation. The flask on the left serves as a reservoir, and from it there is connection with a tube fitted with one or more jets through which the sal-ammoniac



FLOW TESTS ON SLOTTED AEROFOILS : Photographs showing various forms of air flow over model tested at the Göttingen Laboratory.

vapour passes. The necessary pressure is supplied by a small pump driven by an electric motor, which can be seen on the floor in Fig. 1.

The section tested is shown in the accompanying diagram. The plan form was rectangular, measuring 100.3 cm. in span and 21.9 cm. in chord. The slot, it will be seen, did not extend the whole length of the model, but was confined to the inner portion, the two ends being left solid.

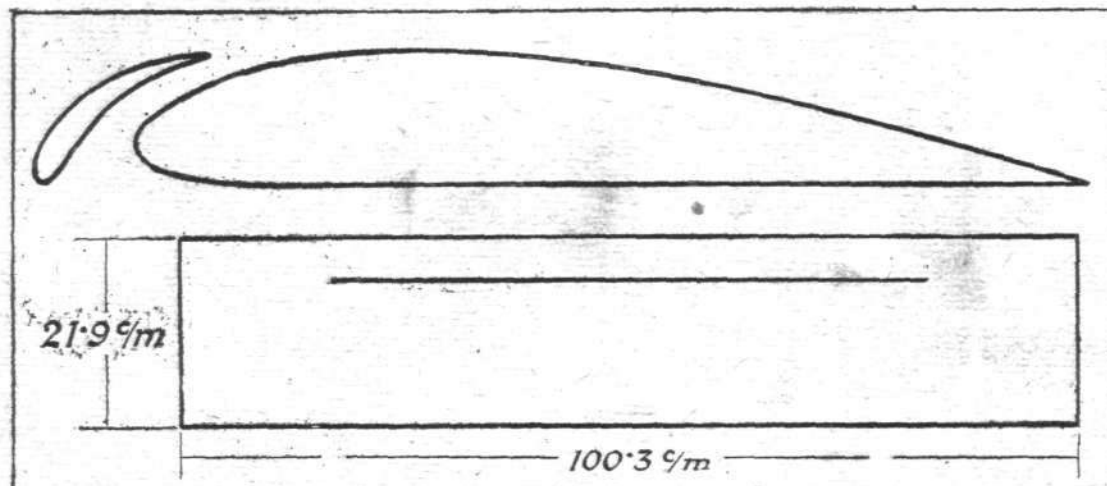
With regard to the tests themselves and the results, Fig. 2 shows the airstream over the slotted portion of the model at an angle of incidence of approximately 21 degrees. It will be observed that no burbling is indicated. The next illustration, Fig. 3, shows the model, again at 21 degrees, but with the smoke blowing over the unslotted portion at the tip. It will be observed that here burbling is clearly taking place. The same applies to 4, which was taken under the same conditions, but which shows the burbling even more clearly.

In the photograph No. 5 the model is at an angle of incidence of approximately 25 degrees, and several jets of smoke are

aerofoil. The burbling on the pressure side is indicated, and it will be observed that no smoke appears to flow over the upper surface. Photograph No. 8 was taken at an angle of incidence of +1 degree. The smoke, as in the previous case, was let in to the pressure side from the rear edge of the auxiliary aerofoil. The photograph clearly shows that the smoke was sucked through the slot to the suction side of the main aerofoil. It will also be seen that the "dead-water" from the pressure side shown in Fig. 7 was cleared away with it.

The general arrangement of the tests is shown in the photograph No. 9. On the left can be seen the mouth of the wind tunnel, and, just in front of it, the tube through which are led the various jets of smoke. In the original photograph these can be clearly seen, although they have been somewhat lost in the reproduction.

In Fig. 10 the model is seen at an angle of incidence of 31 degrees, and a certain amount of burbling is taking place over the slotted portion of the aerofoil. In Fig. 11 the model is mounted at -3 degrees, and burbling is taking



Flow Tests on Slotted Aerofoils:
Diagram of the model with which the experiments were carried out.

being blown across it, some passing under and some over the model. The surprisingly small disturbances in the air flow, in spite of the large angle, are clearly brought out. By way of contrast, photo. No. 6 shows the unslotted portion of the model at the same angle of incidence. Here the burbling is very pronounced, and is of the appearance usually found in unslotted aerofoil sections. It might be noted, in this connection, that during the tests it was found that burbling occurred, as regards the slotted portion, at small velocities only, while at the ends it took place at large angles. It was also found that if the velocity was increased above 5 to 10 metres per second the burbling ceased and the "dead-water" region vanished. From these observations, it was concluded that burbling depends upon the Reynolds number, and that burbling starts first at the centre and moves towards the tips.

In order to obtain information relating to the air flow at negative angles, a test was run with the model at an angle of incidence of 6 degrees. To show up the "dead-water" region, the smoke was let out of the rear edge of the auxiliary

place on the pressure side. It will be noticed that at this angle no smoke is passing through the slot. At +1 degree (photograph No. 8), it will be remembered, smoke was clearly passing through the slot, so that it may be assumed that below about 0 degrees incidence no air flows through the slot. It has already been stated that the tests revealed the fact that at the tips burbling practically ceased at velocities above 10 metres per second. In Fig. 12 is shown a comparatively good flow around the unslotted portion of the model at an angle of incidence of 27 degrees and a velocity of 10 metres per second. The next photograph, No. 13, shows the model at 27 degrees, but at a velocity of only 3 metres per second. Here burbling is clearly taking place over the unslotted portion.

In the last photograph, No. 14, the air flow is comparatively good, although the angle is as large as 27.5 degrees.

In conclusion, we should like to acknowledge our indebtedness to Mr. Handley Page for permission to publish these very interesting photographs, which were, we believe, supplied to him by Herr Lachmann, to whom also our thanks.

THE SEAPLANE'S PLACE IN AVIATION*

I HAVE taken my title because it has always seemed to me that the seaplane in this country has been, as it were, nobody's child.

The seaplane has suffered from ignorance: not the usually employed sense of that word, meaning want of knowledge, but its truer sense, meaning the ignoring of the subject. It is my hope to show why this should not be perpetuated.

Aviation, as we now know it, divides itself into two states, War and Commercial. The position of the seaplane in each is very different, and shall be considered separately for each. The seaplane itself has two divisions and a compromise: the float seaplane, the flying boat and the amphibian. They all have their uses in each sub-division of aviation. Let us take the disagreeable first and consider the seaplane in war.

In the equipment of an air fleet in war, the seaplane is required for all duties which are carried out over the water, other than scout fighting.

* *Resumé* of Paper read by Major Hume before the Institution of Aeronautical Engineers on May 25, 1922.

The idea of doing operations as things are, over the sea in any craft that will not satisfactorily float—not only when forced to, but also when desired—is to my mind foreign to logic and close to the culpable. The counter-argument which the seaplane enthusiast has to answer is, of course: "Granting your grouse, can you do the same job with a seaplane?" The answer is "Yes, with the probable single exception of high performance fighting." All war duties that ought to be done over the sea can be done by the seaplane. Bombing and spotting for submarines, fleet reconnaissance, long-range patrol, blockade, torpedo work and convoy duties. I do not say they can be done as easily from the designer's point of view. They call for a good deal of double-handed knowledge and some special show of ingenuity. The reasons supporting my reply of "Yes" above are that: (a) seaplanes can be built with very comparably the same structure weight as land machines to do the same job; (b) they can land faster, which means high loading and high useful load percentages—possibly at the expense of ceiling *per se*; but in general so far the seaplane has required to

have less ceiling than a land machine. Though I am inclined to the opinion that the next war demand will be in the direction of pushing up the ceiling of seaplanes by superchargers, flap gears, or what not, this ceiling question will tell in the duty of bombing battleships by aircraft if that form of attack is persisted in. It is my own opinion, however, that the correct way to attack a battleship—being based on the desire to let water into it—is to torpedo it; but I am inclined to think that the whole controversy that we have witnessed of late on such subjects has warped its own perspective somewhat by omission of the perception that the introduction of aircraft has vastly increased the battle area of modern warfare and that in future the concentrated clusters of capital ships being less frequently effective will be so much the less important.

The float seaplane in war is suitable for reconnaissance with self-defence, which can be made of a high order, and also for torpedo dropping by virtue of its under carriage form. It is only fair for carrier work because of its view, and indifferent for stunt fighting because of its necessarily distributed masses resulting in large inertia on all axes. Stunt fighting even on the sea is best carried out by small land scouts operating from a carrier ship. They are cheap, small, and "nippy," and the wastage—though probably high in percentage—is not so in net expenditure, and we are talking of war conditions now. The Flying Boat type is particularly suitable for long range, and all general reconnaissance bombing and spotting work; it is the right air tool to tackle submarines with. In small sizes it is good for deck landing if made amphibian. Being a seaworthy affair, it can survive well in difficulties and stay away from its base on occasion. It is usually a bad fighter. It is prone to blind spots, and is often slow to manoeuvre. It lends itself, however, to development of size, and approaches nearer to a separate entity or command than anything so far available in the air, save perhaps the large airship, concerning whose claims to recognition I am not qualified to speak.

The earth's surface is bi-elemental—to use the tenets of Pythagoras for a moment—land and water. An island is therefore of some relation to this surface. The earth's air is mono-elemental—there is no such thing as an island from the air point of view. We must, now that we can fly, fight in the air. Two facts that regulate our air fleet, then, are: (1) Carry as much in the air as possible; (2) if descent has to be made, make it as safely and profitably as possible. To my mind the seaplane affords a mechanism to these ends. There is weight to be carried, which means high loading—or, at any rate, long runs to get off; there are safe landing surfaces required. There is twice the water on this earth than there is land, which one fact takes us a long way toward our argument.

Nevertheless, we are based upon a surface island, and any aggression on our part has to be firstly over the sea; retreating attacks by air have to be pursued over the sea. We have to cross the sea to do every little stunt we conceive. Surely the seaplane is our necessity.

Seaplanes of either class can be loaded up to 11½ lbs./sq. ft., and got off at 20 lbs./h.p., and I may say that the seaplane which recently flew the Atlantic was flying when throttled down and with flap gear at 10 degrees at about 40 lbs./h.p. The North Sea Patrol was done at about 15 lbs./h.p. on seaplanes that were evolved rather than designed.

Now let us turn to a few ruminations on the commercial position of the seaplane. Here are a totally different set of requirements—a fact that with the aftermath of the great war glooming upon us it has been hard to grasp. Just as war duty is of the air airy, so is commercial duty of the earth earthy. We have to put up machines that will carry the maximum weight most economically; height is of secondary importance except so far as it affects economic flight. Reliability is essential; insurable losses must be rendered exceptional; time-keeping and regularity must be studied; in other words, we must pay. My predilection for such duties is the large boat seaplane. It can carry a large weight, if required. Its structure weight can be produced at from 32-34 per cent., lessening with size very slightly. A seaplane is so much faster than any surface craft that the speed bogey may be severely discouraged. This means more payable load. I have in mind a twin-engined boat, value, say, £13,000, loaded to 20 lbs. h.p.; its payable load on 6½ hours' fuel at full power at 90 knots is 33½ per cent. Cut the fuel by half, retaining a range of about 350 sea miles, and the payable load is 41 per cent. The landing speed is about 54 knots at 11½ lbs. sq. ft. These figures are very approximate, as they are worked out on an existing machine. One built for the work would probably have greater range for the same payable load. It is not part of my policy in this paper to present a number of problematical and mythical

aircraft; they do not necessarily lead us anywhere, and may only confuse the issue.

A flying boat is either pushed off by its step or pulled off by its wings. A proper compromise of these two effects the ideal condition for taking off a maximum load. The speed of get-off is usually immaterial; there is plenty of sea. The speed of landing presents no difficulties in the way of increase, provided the seaplane is not one largely pushed off by its step—in which case some serious porpoising or "ballooning"—for want of a better term—may occur; but this can only be through faulty design, as facilities exist for thoroughly testing the hull in model form at the N.P.L. and elsewhere. There is no need to be afraid of high landing speeds. We know the order of impacting forces, and they are not alarming. We can also command in our Empire the best boat building in the world in this particular class of craft.

The high-lift wing section is going to receive great attention from seaplane designers, I fancy. Information is at present a little meagre. But always I think will the cry to the designer be, "Carry more weight." The large boat can even now be built of such a size that it can begin not only to carry finicking valuables, luxuries and notoriety-seeking nobodies, but real cargoes of perishables, urgent ponderables, and things people want in a hurry. But as yet, in fact, the commercial possibilities of the seaplane have been left untried. Commercial aviation has apparently been bent on proving itself out on the world's worst route from the hardest country to do consistent flying in—England. A laudable ideal and a creditable experiment, but not necessarily of the propagandic utility it deserves. While it takes as long on the road to reach and drive away from the international aerodromes as it does to do the actual flying between countries, that fly in the ointment is apt to protrude. Perhaps before long the seaplane may save that actually small but psychologically large deterrent from obtruding itself before the prospective passenger and user. But even that will have its limitations. It's a hard job adapting an old world to new conditions.

To the post office I think the seaplane can be of great service. Outlying parts of the Empire can be mailed quickly and more frequently, in some cases. Express work can be carried on where hitherto impossible. As a concrete example, take Canadian mails. Land is sighted some two days before the liner is actually berthed. In half that time the mails could be collected by flying boats and distributed to Quebec, Montreal, Toronto, and Ottawa by parachutes. The famous F-boat—a machine produced under the purely local genius of a gifted pioneer, Commander J. C. Porte, and, with all its shortcomings, proving of great value to the country. In 1917 these seaplanes had made such a strong impression on the minds of the powers that were, that the fiat went forth: "Please design a seaplane in the light of all the accumulated experience to date to do the same duty"—and the result was a machine 20 ft. less in span, 1,000 lbs. lighter, 10 knots faster, and with twice the climb. This machine was designed by a member of this Institute.

My remarks may strike those particularly concerned with land machines as being somewhat coloured by enthusiasm. But I should like to make it quite clear that I do not in any way oppose the land machine. We have achieved veritable wonders in that direction, and I am most anxious to discount any idea of bias in enthusiasm. All I claim is each to his trade, and good luck to both of us. Each class has its appropriate use, and the main idea of my observations is to indicate to what duties the seaplane is appropriate.

The commercial seaplane has one great business advantage: it need not be run in any way as a competitor to existing transport services, but rather as a super-service in connection therewith. That way progress lies.

The seaplane, however, requires somewhat specialised personnel, in all its branches, and particularly in the matter of pilots. The seaplane pilot has to know rather more than the land machine pilot.

The seaplane was started in France, continued in England, and advanced in America, and perfected again in England, and I claim that we can build the best seaplane in the world, and it is now up to us to see also that we use it to the best advantage as our national characteristics, geographical world distribution, and unique opportunities naturally permit us.

■ ■ ■

Cabral and Coutinho to make Third Attempt

FROM Lisbon it is reported that a third Fairey seaplane, Rolls-Royce "Eagle" engine, is being sent out to Fernando Noronha in order to allow the two Portuguese officers to make a third attempt at completing their flight from Lisbon to Rio. The other two machines, it may be remembered, were wrecked through alighting on a rough sea.

LONDON TERMINAL AERODROME

Monday evening, May 29, 1922

A BANK of fog which has hung persistently over the French coast, extending inland as far as Beauvais, has caused pilots on the London-Paris route much inconvenience during the past week. The weather has, on the whole, been as favourable for flying at Croydon as during the wonderful flying weather of last summer, and the visibility has been as great as from 40 to 50 miles. It is, therefore, a matter for surprise and comment to passengers who arrive at Croydon and find that, though the weather is perfect there, no movement of machines takes place, owing to this vast distant fog-bank.

Intimately connected with this question of localised fog is the matter of compass swinging. Pilots are now beginning to have sufficient faith in their engines to fly above localised fog-patches when they know that the weather is clear and practically cloudless beyond; and this has brought up, again, the question of accurate compasses. It would appear that there is nobody now to swing compasses, and that the instruments on some of the machines have not been swung for months, and are hopelessly out. Directional wireless has, of course, made this compass question less important, but last week not only were the compasses untrustworthy, but "atmospherics" disorganised the wireless.

A Strange Mishap on the 'Drome

A REMARKABLE accident occurred on Tuesday, when two of the Daimler D.H.34's collided with one another when only a few feet above the ground. A new Daimler pilot, Mr. Dickenson, was making a trial flight on one of these machines, and was on the point of landing, when the last Daimler "air express" for the day arrived over the aerodrome from Paris, piloted by Mr. Robinson. Mr. Robinson banked over to make a left-hand turn in order to land, and, with his vision obscured by the slope of his machine, apparently failed to see the other aeroplane, and landed on the top of it. Both aeroplanes were wrecked, and the three passengers in the machine from Paris were shaken, but luckily the greatest injury was a cut lip, sustained by a woman passenger. Both pilots, and the wireless operator and cabin-boy on the incoming Paris machine, escaped with bruises. This accident has left the Daimler Airways with only one machine. In spite of this, however, they are managing to run their services with but little dislocation.

The Instone D.H.4A, which Mr. Keys flew to Brest with a newspaper representative who wished to arrive rapidly at the scene of the collision between the P. and O. boat "Egypt" and a French steamer "Seine," had the misfortune, it is now learned, to crash on landing; but neither Mr. Keys nor his passenger were injured.

The Instone Air Line are making good use of the two Westland machines they have purchased, using them as "reliefs" for their larger machines, and employing them also in cases where there is not a sufficient load to warrant sending a large machine.

Night Flying on the London-Paris Route

MAJOR-GENERAL SIR W. S. BRANCKER intends to make a night flight along the London-Paris "airway," starting from Croydon at 10.15 p.m. on Wednesday. He will be accompanied by Colonel Blandy, who is in charge of the night-flying arrangements. As the aerial lighthouse at Tatsfield is not yet completed, a temporary light is to be installed. Captain Roach will pilot the machine, which is to be one of the R.A.F. Handley Page 0-400's from Biggin Hill.

On Wednesday Captain Macmillan started on an attempt to fly round the world. He was piloting the D.H.9 which has been assembled by the Aircraft Disposal Company at the Waddon Factory. Major W. T. Blake, who is the organiser of the trip, and Lt.-Col. Broome occupied the two passenger seats. Mechanics were working on the machine right up to the last minute; in fact, the start had to be delayed for a couple of hours in order to get the machine finished. Owing to the haste which Major Blake insisted upon on the matter of getting away, the party actually went off before Captain Macmillan had been given an opportunity of testing the 'plane, and he found in his first flight—in which he got as far as Paris—that the machine was tail heavy; with the result that a mechanic had to be dispatched to Paris to put this right. Another D.H.9 was to have accompanied the round-the-world adventurers as far as Athens, to accommodate Press representatives and cinema camera-men, but this met with a series of mishaps which prevented it reaching Paris until Friday. Mr. Barnard, of the De Havilland Aircraft Company, started away from Croydon as early as 3.55 a.m. in an endeavour to catch up with the other machine, but was

obliged to descend at Penshurst owing to fog and mist, and did not arrive at Paris until the evening.

Flowers by "Air Express"

AN interesting experiment is being made by a large firm of flower-growers in Holland. They have picked two separate lots of flowers simultaneously, and have packed one lot in a sealed box, despatching them by air to Croydon, with instructions that they are to remain unopened and to be returned to Holland by air the next day. The other lot has also been packed in an identical box and sealed, but has remained at the offices of the company in Holland. The idea is to see what effect the air journey in the cabin of one of the Fokkers, with the traces of hot exhaust gases, which inevitably find their way into the best aeroplane saloons, has on the flowers. If it is found that there is little or no deterioration, large consignments will be dispatched by air.

On Friday a flight which Captain Leverton describes as "from duckpond to duckpond" took place. A consignment of ducks left Holland on the 2 p.m. machine, and, on arrival at Croydon, were given a drink of water, and then dispatched per passenger train to Norwich, where it was expected that they would be testing the Norfolk worms ere nightfall.

Continental Racers Pass Through Croydon

ON Thursday the competitors in the Coupe Lamblin race from Le Bourget to Brussels, on to Croydon, and thence back to Paris, landed at the aerodrome. M. Bajac, flying a Gourdou monoplane with a 180 horse-power Hispano, was the first to arrive, followed by Mr. Stocken on the Disposal Company's D.H.9A with the 400 Liberty. M. Casale, piloting a "Spad" with a 400 Lorraine-Deitrich, arrived shortly afterwards. Just as Mr. Stocken was leaving again a terrific rain-storm swept over the aerodrome, and he took off right into this.

On Saturday evening Mr. Alan J. Cobham returned from his latest tour of Europe. Since May 18 he has visited by air Paris, Cologne, Hanover, Berlin, Vienna, Munich, Strasbourg, and Calais, covering a distance of nearly 2,500 miles in a little over 24 hours' actual flying time. He made a non-stop flight of four hours between Berlin and Vienna, and flew from Munich to London in the course of a single day, being in the air for 7½ hours.

Captain Muir, of the Surrey Flying Services, has had a very busy week-end. On Saturday he left the air-station as early as 5.30 a.m. to fly with the jockey Donoghue to various training stables where he was riding trials.

By Air-Taxi "from Door to Door"

AFTER his return to Croydon Captain Muir flew down to Brockenhurst in the New Forest, and, alighting on the lawn of an hotel, set down his passenger at the very entrance-door, a distinct improvement on the old method of landing miles away from the destination and having to make a final journey by motor. After arriving back again at Croydon in the evening, Captain Muir had several joy-riders awaiting his return, and was kept busy taking these up. On Sunday the rush of joy-riders commenced soon after noon, and Captain Muir was constantly in the air until a late hour.

Messrs. Handley Page now report a very welcome increase in passengers so far as they are concerned. This last week their figures have shown a decidedly upward trend.

On Monday a Nieuport racing machine started away from Le Bourget in an attempt to improve the figures obtained hitherto in connection with the Coupe Lamblin. After reaching Brussels, however, and while on the way to Croydon, the machine force-landed at Lympe owing to petrol trouble.

Mr. McMullin, well-known as a pilot on the London-Paris route in "Airco" days, made his appearance at the aerodrome on Monday, having just returned from China, where he has been acting as instructor at flying schools. Mr. McMullin, mentioned to me the interesting fact that he had made the journey home from China right across Siberia—being, he believed, the first Englishman to make such a trip since the revolution in Russia.

On Monday evening Miss Gladys Cooper, the well-known actress, travelling by Handley Page, landed at the aerodrome from Paris after a lightning trip to the gay city, between rehearsals, in order to provide herself with new costumes.

Air Command Change

THE Air Ministry announces the appointment of Air Vice-Marshal J. F. A. Higgins, C.B., D.S.O., A.F.C., from R.A.F. Depot (Inland Area), to Headquarters (Inland Area) for duty as Air Officer-Commanding vice Air Vice-Marshal Sir J. M. Salmond, K.C.B., C.M.G., C.V.O., D.S.O., to date May 26.

THE ROYAL AIR FORCE

London Gazette, May 23, 1922
Air-Marshal Sir H. M. Trenchard, Bart., K.C.B., D.S.O., Principal Aide-de-Camp to the King, is promoted to the rank of Air Chief Marshal; April 1.

General Duties Branch

Flying Offr. W. H. Markham, Lieut., Manch. R., is granted a permanent commn., retaining his present substantive rank and seny.; Nov. 17, 1921. Lieut. J. G. Hannay, A. and S. Hrs., is granted a temp. commn. as a Flying Officer, with effect from and with seny. of May 6, on seconding for four years' duty with the R.A.F. Wing Comdr. R. G. Blomfield, D.S.O., is transfd. from half-pay, scale A, to Scale B; May 5. Flying Offr. A. D. L. Carroll is transfd. to the Reserve, Class A; May 17. Flying Offr. J. H. H. Brunt relinquishes his short service commn. on account of ill-health, and is permitted to retain the rank of Lieut.; May 24. Flying Offr. R. E. Dean, A.F.C., resigns his short service commn., and is granted the rank of Capt.; May 18. Pilot Offr. G. W. Selby Lowndes resigns his short service commn.; May 24. Pilot Offr. G. H. Marshall resigns his short service commn.; May 24.

Stores Branch

The temp. commn. of Flying Offr. H. F. Law is terminated on cessation of duty; May 24.

Medical Service

The following are granted short service commns. as Flying Offrs., with effect from, and with seny. of, May 8:—W. E. Barnes, C. A. Lindup. Flight Lieut. C. P. Barber is granted a short service commn., retaining his present substantive rank and seny.; May 2.

Memoranda

Lieut. A. H. A. Gem, M.C., relinquishes his temp. commn. on ceasing to be empld., and is granted the rank of Maj.; Aug. 25, 1919. The permission granted to Lieut. D. Martin to retain his rank is withdrawn on his joining the Army; April 18.

London Gazette, May 26, 1922

Wing Commander H. M. Cave-Brown-Cave, D.S.O., D.S.C., is appointed Deputy Director of Design, Air Ministry; May 29. (Vice Group Capt. E. F. Briggs, D.S.O., O.B.E.)

General Duties Branch

The following Pilot Officers on probation are confirmed in rank, with effect from the dates indicated:—K. R. Boulton, C. McL. Reid, M. V. Ward; May 1. F. Beesley, J. F. Blythell, W. T. D. Windham; May 2. T. C. Dodd; May 3. H. W. Beck; May 8. A. R. M. Brain; May 15. Observer Officer R. Nicholson is placed on half-pay, Scale A; May 20.

BRITISH FLYING SERVICES WINDOW IN WESTMINSTER ABBEY

THE ceremony of unveiling a window in Westminster Abbey to the memory of the officers and men of the Flying Services—a beautiful piece of work by Mr. Harry Grylls—a preliminary announcement of which appeared in our last issue, took place last Friday, and was an exceedingly impressive one. Just before the ceremony a selection of music was played by the central band of the Royal Air Force, under the direction of Flying Officer J. Amers. In the presence of Mrs. Bennett, the American Ambassador, and with the heads of the Air Ministry, the Royal Air Force, and other distinguished men, Capt. the Hon. F. E. Guest, M.P., Secretary of State for Air, asked the Dean (Bishop Ryle), in the following words, to accept the window:—

"In the name of the Royal Air Force I ask the Right Reverend the Dean of Westminster to accept the custody of this memorial window, which has been erected to the glorious memory of the officers and airmen of the British Flying Services who fell during the Great War.

"This beautiful window has been erected entirely at the

personal expense of Mrs. Louis Bennett of the United States of America, whose only son, Lieutenant Louis Bennett, was killed in action whilst serving with a British squadron in France."

In reply the Dean said:—

"The Dean and Chapter gratefully accept the gift which you have presented to us, and fittingly, as we think, this beautiful window, which is to commemorate the young officers and men of that distinguished force who fell in the Great War, looks down upon the grave of the Unknown Warrior. So far as lies in their power, the Dean and Chapter hope to keep it in safe custody throughout the years. We are not going to be unmindful of the great generosity of the donor, who has the assurance of the respectful sympathy, as well as of the deep gratitude, of all who are gathered within these walls today."

The Dean then dedicated the window, prayers and collects following, after which the buglers sounded the Last Post, and the ceremony concluded with the National Anthem.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN MAY 21 AND May 27, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and (in brackets) Number of each type flying
			Mails	Goods				
Croydon-Paris ...	63	139	29	42	59	h. m. 3 7	D.H. 34 G-EBBS (2h. om.)	B. (5), Br. (1), D.H. 4 (2), D.H. 18 (3), D.H. 34 (5) G. (6), H.P. (1), Sp. (2), W. (1).
Paris-Croydon ...	65	170	7	38	62	2 34	D.H. 34 G-EBBU (2h. om.)	B. (4), Br. (1), D.H. 4 (1), D.H. 18 (3), D.H. 34 (5), G. (8), H.P. (1), Sp. (4), W. (1).
Croydon-Brussels ...	7	8	7	7	7	2 15	D.H. 18 G-EARO (2h. om.)	D.H. 18 (1), D.H. 34 (1), W. (1).
Brussels-Croydon ...	8	30	—	5	8	2 34	D.H. 18 G-EARO (2h. 26m.)	D.H. 18 (1), D.H. 34 (1), W. (1).
Croydon-Rotterdam-Amsterdam ...	11	4	10	9	11	2 47		F. (7).
Amsterdam-Rotterdam-Croydon ...	10	6	9	9	10	2 59		F. (7).
Totals for week ...	164	357	62	110	157			

* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.
P. = Potez. R. = Rumpler. Sa. = Salmson. Se. = S.E.5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Daimler Hire, Ltd.; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

Incidental Flying.—Seven of the Aircraft Disposal Co.'s D.H. 9's were put through their paces at Croydon during the week, Capt. MacMillan, Capt. Muir and Capt. Stocken sharing them between them. Two of the De Havilland Co.'s D.H. 9's returned to Croydon from St. Inglevert.

At the Levée

At the Levée held by His Majesty the King at St. James's Palace on May 29, there were present the following:—

Air Chief Marshal Sir Hugh Trenchard, Principal Air Aide-de-Camp (in attendance on H.M. the King), Commander Juan Leguia, Naval Air Attaché of Peru, Capt. the Right Hon. F. E. Guest, C.B.E., D.S.O., Secretary of State for Air, Major-General Sir Frederick Sykes, G.B.E., K.C.B., C.M.G., Squadron Leader Frederick Sowrey, D.S.O., M.C. The following were amongst those presented to the King:—Flight-Lieut. C. Hanson-Abbott, Flight-Lieut. L. J. St. G. Bayly, M.C., Flight-Lieut. F. H. Coleman, Flight-Lieut. I. Cullen, A.F.C., Squadron-Leader A. S. Glynn, the Rt. Hon. Lord Gorell, C.B.E., M.C., on his appointment as Under-Secretary of State for Air, Wing-Comdr. E. L. Gossage, D.S.O., M.C., Wing-Comdr. S. A. Hebdon, O.B.E., Air Vice-Marshal J. F. A. Higgins, C.B., D.S.O., A.F.C., on appointment as Air Officer Commanding Inland Area, R.A.F., Flight-Lieut. R. M. Banks-Jones, Squadron-Leader R. C. Lane, Flight-Lieut. A. S. G. Lee, M.C., Lieut. G. L. Lewis, A.F.C., R.N., Air-Commodore D. Munro, C.I.E., Flight-Lieut. C. H. B. Jenner-Parson, Wing-Comdr. M. Spicer, Squadron-Leader A. A. Walser, M.C., D.F.C., Squadron-Leader J. K. Wells, Flying Officer J. G. Western, M.B.E.

Parachute Research

In reference to the question asked by Sir William Joynson-Hicks in the House on May 17, whether the rumour was true that the Research Department on Parachutes had been very largely depleted in the last month and that officers had been leaving, after making enquiries, the Secretary of State for Air has written to Sir William as follows:—

"The foundation for the rumour is that it has been necessary in the interests of economy and in order to keep within the limits of the estimates to retrench on all sides here, and it became impossible to preserve a separate department solely for the purpose of dealing with parachute research; but there is no intention whatever to abandon research work on parachutes, and with the express view of carrying it on sufficient officers with expert knowledge of the work have been retained in the experimental department, where their duties will include, *inter alia*, such research work on parachutes as may be required."

Dutch Parcels Air-Post

THE Postmaster-General announces that parcels addressed to any part of Holland may now be posted for conveyance from London to Rotterdam and Amsterdam by air and for express delivery by the Dutch Post Office. Parcels will be accepted at the Post Offices in London and in the larger provincial towns where air parcels for Paris and Brussels are already accepted. The scale of charges, inclusive of express delivery at the place of destination, will be as follows: For parcels weighing up to 3 lb., 4s.; 3-7 lb., 7s. 6d.; 7-11 lb., 10s. 6d. On parcels addressed "Poste Restante" the charges will be 6d. less.

There will be two dispatches by air each day. Parcels posted in London overnight, and, in the provinces, in time to be included in the night parcels mails to London, will normally be forwarded by air next morning and delivered in Rotterdam and Amsterdam the same evening, and in other parts of Holland by the second morning after posting. They should thus reach their destination two or three days earlier than if sent by the ordinary parcel service.

Further details of the service may be obtained on application at any accepting Post Office. The names of the accepting offices and the latest times of posting in the chief provincial towns where the acceptance of parcels for conveyance by air is authorised may be ascertained from the local Head Post Office.

French Posthumous Honours

On the recommendation of the French Under-Secretary of State for Aeronautics, MM. Jean Mire and Gabriel Simonet, the pilot and mechanic who were killed in a collision near Beauvais on April 7, have been created Chevaliers of the Legion of Honour.

Stunting Through the Forth Bridge

It is reported that a pilot of an aeroplane, on May 29, when trying to fly through the centre arch (1,710 ft. wide) of the Forth Bridge, Queensferry, near Edinburgh, apparently misjudged his distance and struck the water, the machine turning turtle.

The pilot was able to extricate himself and to keep afloat until picked up by a boat's crew. The machine, in a damaged condition, was towed to Hawes Pier, South Queensferry.

THE LONDON AERO-MODELS ASSOCIATION

(The Society of Model Aeronautical Engineers.)

On Thursday last at Headquarters the discussion on "The Construction of Built-up Fuselages" proved to be very interesting, and was thoroughly enjoyed by all present. Mr. L. Grey occupied the chair.

A hearty vote of thanks was passed to Mr. F. de P. Green and Mr. L. Grey for the Cups they have kindly given to be competed for on June 3 (for particulars of Competition see last week's FLIGHT). On Thursday, June 1, a discussion will be opened on the "Construction of Wings." Members are requested to bring some wings along for demonstration purposes. On Thursday, June 8, at 7 p.m., at Headquarters, 20, Great Windmill Street, Piccadilly Circus, W. 1, the Association will be honoured by the presence of Dr. E. H. Hankin, M.A., Sc.D., who will read a paper on "The Possibility of Achieving Artificial Soaring Flight," which will be illustrated by lantern slides. Admittance will be by ticket only, obtainable from the Hon. Sec., A. E. Jones, 48, Narcissus Road, West Hampstead, N.W. 6. Early application should be made, as accommodation is limited.

NEW COMPANIES REGISTERED

AIRCO AERIALS, LTD., 15, Fumival Street, E.C. 4.—Capital £2,000, in £1 shares. Manufacturers of and dealers in photographic materials, and general photographers, etc. First directors: Capt. S. W. Hiscocks and H. A. Peters.

GEORGE ENGLAND (1922), LTD.—Capital £10,000, in 9,900 participating ordinary shares of £1 and 2,000 deferred shares of 1s. each. Acquiring the business carried on at Walton-on-Thames as George England, Ltd., manufacturers of and dealers in aerial conveyances and aircraft of all kinds, etc. First directors: G. G. T. Simpson, N. A. Hodgkinson, and E. C. G. England. Solicitor, C. R. Enever, Broad Street House, E.C.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motors. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

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